

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
20 January 2005 (20.01.2005)

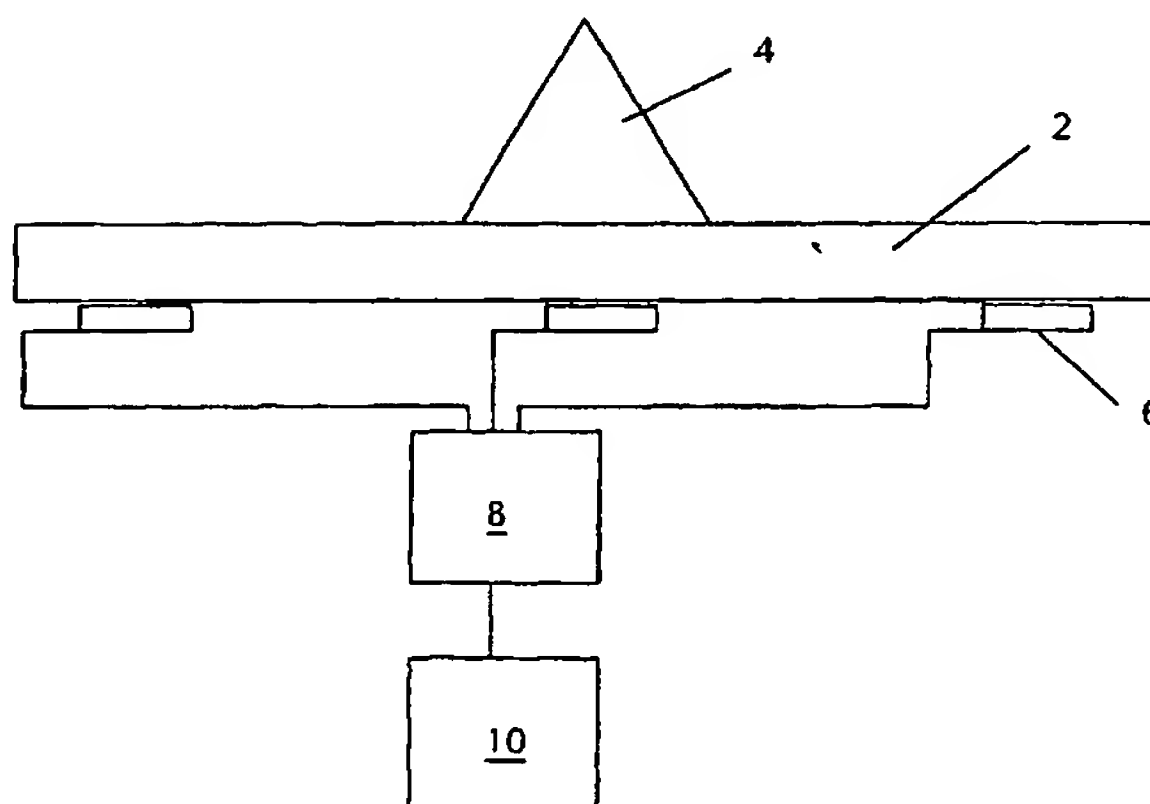
PCT

(10) International Publication Number
WO 2005/005947 A1

- (51) International Patent Classification⁷: **G01L 1/20**, 5/22, A61B 5/103
- (21) International Application Number: PCT/GB2004/002963
- (22) International Filing Date: 9 July 2004 (09.07.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 0316002.5 9 July 2003 (09.07.2003) GB
- (71) Applicant (for all designated States except US): **ASTON UNIVERSITY** [GB/GB]; Aston Triangle, Birmingham B4 7ET (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **BRETT, Peter** [GB/GB]; c/o Aston University, Aston Triangle, Birmingham B4 7ET (GB). **MOLLOY, Anthony** [GB/GB]; c/o Aston University, Aston Triangle, Birmingham B4 7ET (GB). **MA, Xianghong** [CN/GB]; c/o Aston University, Aston Triangle, Birmingham B4 7ET (GB).
- (74) Agent: **WARD, David, I.**; Marks & Clerk, Alpha Tower, Suffolk Street Queensway, Birmingham B1 1TT (GB).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR SENSING AND INTERPRETING DYNAMIC FORCES



(57) Abstract: The present invention relates to a sensing system which is capable of discriminating types of causes of changing loads on a surface, such as the type of motion of a human subject. The system has wide ranging applications including sports performance (e.g. golf club swing analysis). The system comprises a deformable load bearing surface (2), a plurality of mutually spaced sensors (6), a processor (8) and an output (10). The sensors (6) are coupled through the deformation response of the surface (2) to an applied load (4) to receive local sensory data from the surface (2). The processor (8) is operatively coupled to the sensors (6) and is arranged to transform the sensory data into information data relating to a load (4) applied to the surface (2), e.g. by means of a neural network algorithm. In an alternative embodiment, a housing including the deformable load bearing surface (2) contains a flowable material (e.g. liquid) which flows in response to the deformation of the surface.

WO 2005/005947 A1



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.